

1. (Currently Amended) An apparatus for testing a radio apparatus of a type which receives a radio frequency (RF) signal from a RF signal generator and sends a RF signal to a receiver to modify the characteristics of the RF signal transmitted by said signal generator, said apparatus comprising:

an RF signal generator (122) for transmitting an RF signal (RF10) to said radio apparatus (127), and means to receive an input digital signal (DSIG10), which signal generator (122) controls the characteristics of the RF signal (RF10) transmitted in accordance with the input digital signal (DSIG10);

an RF receiver (129) for receiving an RF signal (RF11) from said radio apparatus (127), said RF receiver (129) including means to generate an output digital signal (DSIG14, DSIG15) having characteristics dependent on the characteristics of the RF signal (RF11) received;

a digital signal generator (102) for generating and outputting a digital signal (DSIG3);

signal modifying means (111, 112) connected to receive said digital signal (DSIG3) from said digital signal generator (102) and to receive said digital signal (DSIG14, DSIG15) from said RF receiver (129) whereby to modify said digital signal (DSIG3) from said digital signal generator (102) in accordance with said digital signal (DSIG14, DSIG15) from said RF receiver to thereby output a first modified digital signal (DSIG11, DSIG12) to provide the basis of said digital signal (DSIG10) input to said RF signal generator (122),

wherein, said RF receiver (129) includes means to generate two output digital signals (DSIG14, DSIG15) having characteristics based on different characteristics of the RF signal (RFII) received by the receiver (129), and there are provided a second and third digital signal generators (100, 103) which output respective digital signals (DSIG1, DSIG2), said signal modifying means (111, 112) comprising first and second signal modifying means (111, 112) connected to respectively receive a digital signal (DSIG3) from said first digital signal generator (102) and to receive a respective digital signal (DSIG14, DSIG15) from said RF receiver (129) whereby to modify said digital signal

(DSIG3) from said first digital signal generator (102) in accordance with said digital signal (DSIG14, DSIG15) from said RF receiver to thereby output a respective first and second modified signal (DSIG11, DSIG12), third and fourth signal modifying means (105, 107) connected to receive a digital signal (DSIG1, DSIG2) from a respective one of the second or third digital signal generators (100, 103) and connected to receive said digital signal (DSIG11, DSIG12) from a respective one of said first or second signal modifying means 111, 112 whereby to modify the respective modified digital signal (DSIG11, DSIG12) in accordance with said digital signal (DSIG1, DSIG2) from the relevant second or third digital signal generator (100, 103) and to thereby output third and fourth modified digital signals (DSIG4, DSIG5), a combination of digital signals derived from said third and fourth modified signals (DSIG4, DSIG5) providing said digital signal input to said RF signal generator (122).

2. (Original) Apparatus as claimed in claim 1 in which said radio apparatus comprises a cellular phone.
3. (Original) Apparatus as claimed in claim 1 or claim 2 in which there is provided a second digital signal generator (100, 103) for generating and outputting a digital signal (DSIG1, DSIG2), second signal modifying means (105, 107) being connected to receive the digital signal (DSIG, DSIG2) from said second digital signal generator (100, 103) and connected to receive said first modified digital signal (DSIG11, DSIG12) from said first signal modifying means (111, 112) whereby to modify said first modified digital signal (DSIG11, DSIG12) in accordance with said digital signal (DSIG1, DSIG2) from said second digital signal generator (100, 103) to thereby output a second modified digital signal (DSIG4, DSIG5) to provide the basis of said digital signal (DSG10) input to said RF signal generator (122).
4. (Original) Apparatus as claimed in claim 3 including a digital fading simulator (112, 116), connected to receive said second modified digital signal, the output (DSIG6, DSIG7) of the digital fading simulator comprising the second modified digital signal (DSIG4, DSIG5) the characteristics of which have been modified.

5. (Original) Apparatus as claimed in claim 4 in which said digital fading simulator includes means to change at least one of said digital signal elements of said second modified digital signal (DSIG4, DSIG5) to thereby change the phase or amplitude or delay of the RF signal (RF10) transmitted by said RF signal generator (122).
6. (Currently Amended) Apparatus as claimed in ~~claims~~ claim 5 in which the fading simulator includes means to vary one or more of said digital signal elements in accordance with a predetermined pattern with respect to time.
7. (Original) Apparatus as claimed in any of claims 1 to 6 in which the or each digital signal generator outputs a digital signal including digital signal elements relating to one or more of phase, amplitude, and delay in respect of the resultant RF signal (RF10) transmitted by the RF signal generator (122).
8. (Cancelled)
9. (Currently Amended) Apparatus as claimed ~~in claim 8~~ in claim 1 or claim 2 including:
- a first digital fading simulator (116), connected to receive said third modified digital signal (DSIG4), the output (DSIG6) of the first digital fading simulator (116) comprising a fifth modified digital signal (DSIG6) the characteristics of which have been modified by said first digital fading simulator;
 - a second digital fading simulator (112), connected to receive said fourth modified digital signal (DSIG5), the output (DSIG6) of the second digital fading simulator (116) comprising a sixth modified digital signal (DSIG7) the characteristics of which have been modified by said second digital fading simulator; and
 - a digital signal combines means (119) to combine said fifth and sixth digital signal to provide a seventh digital signal (DSIG8).

10. (Original) Apparatus as claimed in claim 9 in which each digital fading simulator (116, 112) includes means to change at least one of said digital signal elements of said third or fourth modified digital signal (DSIG4, DSIG5) to thereby change the phase or amplitude or delay of the RF signal (RF10) transmitted by said RF signal generator (122).

11. (Currently Amended) Apparatus as claimed in ~~claims~~ claim 10 in which each digital fading simulator (116, 112) includes means to vary one or more of said digital signal elements in accordance with a predetermined pattern with respect to time.

12. (Original) Apparatus as claimed in any of claims 1 to 11 in which it is provided a white noise digital signal generator (124), the digital output signal DSIG9 of said white noise digital signal generator being applied to the digital signal applied to digital signal DSIG10 input to said RF signal generator (122).

13. (Currently Amended) Apparatus as claimed in claim 2 ~~and 8~~ in which said first digital signal generator (102) provides a digital signal (DSIG3) corresponding to a common channel RF signal when applied to the RF signal generator (122), and said second and third digital signal generators (100, 103) provide output digital signals DSIG1 and DSIG2 which correspond to antenna specific RF signals when applied to said RF signal generator (122).

14. (Original) An apparatus for testing a cellular phone comprising
an RF signal generator (122) for transmitting an RF signal (RF10) to said cellular phone;
an RF receiver (129) for receiving an RF signal RF11) from said cellular phone (127), said RF receiver (129) generating first and second digital signals (DSIG14,DSIG15) relating to different characteristics of the received RF signal (RF11);
a digital signal generator (102) for generating a digital signal (DSIG3), which digital signal is passed to a first and a second channel;
a first antenna specific digital signal generator (103);
a second antenna specific digital signal generator (100);

whereby the digital signal (DSIG3) from the first digital signal generator in the first channel is modified by the first of the digital signals (DSIG14) from the RF receiver (129) and in the second channel is modified by the second of the digital signals (DSIG15) from the RF receiver (129), the modified digital signal (DSIG12) in said first channel being further modified by a digital signal (DSIG2) provided by the first antenna specific digital signal generator (103), and the modified digital signal (DSIG11) in the second channel being further modified by a digital signal (DSIG1) from the second antenna specific digital signal generator (100);

a first fading simulator (112) being provided in the first channel to modify the further modified digital signal (DSIG5) passing along said channel in such a manner as to replicate a preferred pattern of variation;

a second fading simulator (116) being provided in the second channel to modify the further modified digital signal (DSIG14) passing along said channel in such a manner as to replicate a preferred pattern of variation;

the digital signals (DSIG7,DSIG5) from the first and second fading simulators being combined to provide an input signal (DSIG8,DSIG10) to the RF signal generator (122) ;

whereby as the fading simulators modify the relevant digital signals to thereby modify the RF signal (RF10) provided by the RF signal generator (122), the cellular telephone provides a feed back signal (RF11) which modifies the digital signals in the two channels so as to compensate for the effect of the fading simulators in a measurable manner.

15-17. (Cancelled)